WHAT IS CLAIMED IS:

1. A method for identifying objects in an image comprising:

receiving an image with a first resolution;

processing the image at a second resolution to identify an object;

processing the image at the first resolution using the identified object to identify another object, wherein the first resolution is higher than the second resolution.

2. The method of claim 1, further comprising:

processing the image at a third resolution to identify yet another object, wherein the yet another object is employed in the identification of the object and the another object, wherein the second resolution is higher than the third resolution.

3. The method of claim 2, further comprising:

downsampling the image from the first resolution to the second resolution; and

downsampling the image from the second resolution to the third resolution.

4. The method of claim 1, wherein the processing is performed as a function of a type of terrain in the image.

5. The method of claim 4, wherein the type of terrain is identified using a priori information and a gray level co-occurrence identification.

6. The method of claim 1, further comprising:

determining whether the object and the another object are desired objects based upon a context associated with the image.

7. The method of claim 1, wherein the object is a river.

8. The method of claim 2, wherein step of processing the image at the third resolution comprises:

identifying portions of the image containing clouds; and

identifying portions of the image containing bodies of water, wherein if portions of the image are identified which contain clouds or bodies of water, identifying the clouds or bodies of water as the yet another object.

9. The method of claim 8, wherein the identified portions of the image containing clouds or bodies of water are employed in the identification of objects in the image at the second resolution and another objects in the image at the first resolution.

10. A method for automatically identifying objects in an image comprising:

receiving an image;

generating a second image identifying areas of the image which border regions of different intensities;

generating a third image identifying portions of the image for which an average gradient magnitude of the portion is greater than a threshold;

processing the second image to produce a fourth image, the fourth image identifying lines in the image;

segmenting the image into a plurality of regions;

determining which of the plurality of regions is a background region not containing said objects;

merging adjacent regions which are not background regions; and

identifying objects in the merged adjacent regions.

11. The method of claim 10 further comprising:

classifying the identified objects.

12. The method of claim 10, wherein the identified objects are manmade objects.

13. The method of claim 10, wherein the identified objects are clouds.

14. The method of claim 13 further comprising:

identifying cloud banks; and

refining identified clouds and cloud banks.

15. The method of claim 10, wherein said step of generating a third image comprises:

dividing the image into a plurality of portions;

determining an average gradient magnitude for each of the plurality of portions;

calculating a mean gradient magnitude of the image using the average gradient magnitudes of each of the plurality of portions, wherein the threshold is the mean gradient magnitude of the image.

16. The method of claim 10 wherein the lines in the fourth image are identified using the identified areas of the image which border regions of the image of different intensities.

17. A method for automatically identifying bodies of water in an image comprising:

receiving a first image at a first resolution;

processing said image at a second resolution to produce a second image identifying bodies of water in the image at said second resolution;

processing said image at a third resolution to produce a third image identifying bodies of water in the image at said third resolution;

automatically identifying bodies of water in the first image using said second and third image.

18. The method of claim 17, wherein said processing steps each comprise:

delineating the identified bodies of water in the produced image.

19. The method of claim 17, wherein the step of processing said image at said third resolution comprises:

identifying edges in the image at said third resolution, wherein edges are areas of the image which border regions of different intensities;

producing an image identifying parallel edges in the image at said third resolution;

producing a dark image and a bright image from said image identifying parallel edges;

processing the dark and bright images;

combining the processed dark and bright images to produce said third image.

20. The method of claim 17, wherein the step of processing said image at said second resolution comprises:

removing errors in said image at said second resolution caused by a detector which captured the first image;

determining a variance of intensity of each pixel in the image at said second resolution from a mean intensity of pixels surrounding each pixel;

removing pixels which have a variance less than a threshold variance;

labeling contiguous pixels as a unique region;

removing unique regions containing less than a predetermined number of pixels;

calculating a set of features for each remaining unique region; and

determining whether each remaining unique region contains bodies of water using said set of features.

21. The method of claim 20, wherein said set of features comprises:

density change, edge change, edge change percent; edge strength and intensity mean.

22. A method for automatically identifying objects in an image comprising:

identifying terrain types in the image;

generating a second image identifying areas of the image which border regions of different intensities by identifying a gradient magnitude value for each pixel of the image;

generating a filtered image from the second image, the filtered image identifying potential objects which have a smaller radius than the size of a filter and a different brightness than background pixels surrounding the potential objects;

comparing the second image and the filtered image to identify potential objects as an object, a potential object is identified as an object if the potential object has a gradient magnitude greater than a threshold gradient magnitude, and the threshold gradient magnitude is based on the terrain type identified in the portion of the image where the potential object is located.

23. The method of claim 22, further comprising:

generating a mean local gradient magnitude image using the second image, wherein the threshold gradient magnitude is determined using the mean local gradient magnitude image.

24. The method of claim 23, wherein the threshold comprises a first threshold based on the mean local gradient magnitude, and a second threshold based on a maximum histogram value of a local gradient magnitude.

25. The method of claim 22, wherein the step of generating a filtered image comprises:

performing a series of dilations and erosions of the second image to produce a spatially filtered image; and

subtracting said spatially filtered image from the image to produce the filtered image.

26. The method of claim 25, further comprising:

performing an intensity histogram of the filtered image to produce a maximum intensity value and a minimum intensity value;

generating a minimum brightness value and a maximum brightness value for each terrain type identified in the image; and

removing portions of the image which are not greater than the maximum intensity value or less than the minimum intensity value, and which are not greater than the minimum brightness value for a particular terrain type for the portion of the image or less than the maximum brightness value for a particular terrain type for the portion of the image.

27. A method for identifying linear objects in an image comprising:

identifying terrain types in the image;

generating a gradient vector image from the image, the gradient vector image identifying a gradient magnitude value and a gradient direction value for each pixel of the image;

identifying lines in the gradient vector image using the identified terrain types in each portion of the image;

determining whether the identified lines are perpendicular, collinear, or parallel;

eliminating lines which are not perpendicular, collinear, or parallel with another line in the gradient vector image; and

identifying linear objects using the remaining lines.

28. The method of claim 27, wherein the step of identifying lines using the identified terrain types comprises:

applying the identified terrain types to the vector gradient image;

determining a threshold based on mean gradient magnitudes for each individual identified terrain type; and

eliminating pixels in the gradient vector image which are not greater than the threshold for the identified terrain type associated with the pixels.

29. The method of claim 28, wherein the step of identifying lines further comprises:

comparing each remaining pixel in the gradient vector image to neighboring pixels; and

eliminating a remaining pixel if the gradient magnitude value of the pixel is less than the gradient magnitude value of one of the neighboring pixels.

30. The method of claim 29, wherein a pixel is determined to be a neighboring pixel based on the gradient direction value of the remaining pixel.

31. The method of claim 29, further comprising:

grouping pixels in a line with the same gradient direction value into a region, wherein the grouping accounts for errors in the gradient direction values.

32. The method of claim 31, further comprising:

dividing each region into a region of a predetermined number of pixels if the region is greater than the predetermined number of pixels;

determining a straight line approximation for any of the regions of the predetermined number of pixels, wherein the straight line approximation is based on a calculated slope and center of mass for each of the regions of the predetermined number of pixels.

33. The method of claim 32, further comprising:

determining a slope, endpoints, Y-intercept, and length of each of the lines or straight line approximations; and

storing the slope, endpoints, Y-intercept, and length of each of the lines or straight line approximations.

34. The method of claim 33, wherein the determination of whether lines are collinear or parallel comprises:

comparing each line or straight line approximation to every other line or straight line approximation with a similar stored slope to determine whether the line or straight line approximation is a predetermined distance from other lines or straight line approximation with a similar stored slope, whether the line or straight line approximation is antiparallel to the other lines or straight line approximations with a similar stored slope, and whether the line or straight line approximation and the other lines or straight line approximations with a similar stored slope possess gradient magnitudes within a predetermined tolerance.

35. The method of claim 34, wherein the determination of whether lines are parallel comprises:

determining whether each line or straight line approximation is within the same terrain type as the other line or straight line approximation, wherein if the lines are not within the same terrain type, the lines are determined not to be parallel.

36. The method of claim 27, further comprising:

grouping lines determined to be parallel into a parallel line group; and

dividing lines in each parallel line group into parallel line pairs based on a length of the lines.

37. The method of claim 36, wherein the linear objects are identified using the parallel line pairs.

38. A method for identifying objects in an image comprising:

generating a gradient vector image from the image, the gradient vector image identifying a gradient magnitude value and a gradient direction for each pixel of the image;

identifying lines in the gradient vector image;

determining whether the identified lines are perpendicular;

determining whether more than a predetermined number of pixels on each of the lines identified as perpendicular have a gradient magnitude greater than a predetermined threshold;

determining whether the individual lines which are identified as perpendicular are within a predetermined distance of each other;

identifying a portion of the image as an object if the identified lines are perpendicular, more than the predetermined number of pixels on each of the lines have a gradient magnitude greater than the predetermined threshold, and are within a predetermined distance of each other.

39. The method of claim 38, wherein the step of identifying a portion of the image as an object further comprises:

calculating a set of features for each portion of the image identified as an object; and

classifying the portion of the image identified as an object using said set of features.

40. The method of claim 39, wherein said set of features comprises:

area, average intensity, standard deviation, global intensity, gray contrast, edge magnitude, average mean edge magnitude, morphological filter statistics, structure confidence, and texture energy filters.

41. A method of identifying linear objects in an image comprising:

receiving an image with a first resolution;

generating a filtered image from the image, the filtered image identifying potential objects which have a smaller radius than the size of a filter and a different brightness than pixels surrounding the potential objects;

receiving a second image identifying regions in the image with the first resolution which are not to be processed;

generating a third image by removing regions in the filtered image which are identified in the another image as regions in the image which are not to be processed;

identifying lines in the third image;

generating a fourth image by removing lines identified in the third image which do not meet predetermined criteria; and

identifying linear objects in the image using the remaining lines in the fourth image.

42. The method of claim 41, wherein the step of generating a filtered image comprises:

performing a series of dilations and erosions of the image to produce a spatially filtered image; and

subtracting said spatially filtered image from the image to produce the filtered image.

43. The method of claim 41, wherein the identified portions in the second image are portions of the image with a first resolution which contain either clouds or bodies of water.

44. The method of claim 41, wherein the step of identifying lines in the third image comprises:

performing a Hough transform on the third image, thereby identifying a number of pixels which line on a line with a particular angle and location.

45. The method of claim 41, wherein the step of generating a fourth image comprises:

eliminating identified lines containing less than a predetermined number of pixels.

46. The method of claim 45, wherein the step of generating a fourth image further comprises:

determining a mean and standard deviation of intensities for portions of the image on either side of the remaining lines; and

eliminating a line from the remaining lines if the mean and standard deviation of intensities of the portion of the image on one side of the line is more than a predetermined amount different from the mean and standard deviation of intensities on the other side of the line.

47. A method of identifying linear objects in an image comprising:

receiving an image with a first resolution;

processing the image to produce an image at a second resolution;

generating a filtered image from the image at the second resolution;

receiving a second image identifying portions of the image with the first resolution which are not to be processed;

generating a third image by removing portions of the filtered image which are identified in the second image as portions of the image which are not to be processed;

identifying lines in the third image;

generating a fourth image by removing lines identified in the third image which do not meet predetermined criteria; and

identifying linear objects in the image using the remaining lines in the fourth image.

48. A method for identifying linear objects in an image comprising:

receiving a first and second image identifying linear objects, the first image having a first resolution and the second image having a second resolution;

processing the first and second image to produce a third image, wherein the processing combines linear objects from the first and second image;

identifying linear objects in the image using the third image.

49. The method of claim 48, further comprising:

receiving another image, the another image having a third resolution, wherein the processing step processes the another image when producing the third image.